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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,559	09/05/2006	Rune Freyer	2006-IP-019761 U1 USA	7234
49431 7590 04/01/2009 SMITH IP SERVICES, P.C. P.O. Box 997 Rockwall, TX 75087				
EXAMINER				
DITRANI, ANGELA M				
ART UNIT		PAPER NUMBER		
3676				
MAIL DATE		DELIVERY MODE		
04/01/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/598,559

**Applicant(s)**

FREYER, RUNE

**Examiner**

Angela M. DiTrani

**Art Unit**

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/21/09 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claim 1 has been amended to include the limitation wherein the expandable material extends from a retracted state to an expanded state independent of the tubular structure. The additional limitation of "independent of the tubular structure" is not explicitly disclosed within the specification as originally filed.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "substantially" in each of claim 7 and claim 12 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "substantially" renders the degree to which the elongated channel is defined indefinite insofar as because the manner in which the elongated channel is defined by the castable material, the tubular structure and the borehole wall cannot be determined.

6. Claims 8-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation of "extending the tubular structure into the borehole" in line 8 of independent claim 8 is unclear. Replacement with –installing the tubular structure in the borehole- as written within the specification as originally filed on page 5, lines 27-28, is advised. Claims 9-12, dependent from independent claim 8, are hereby rejected under 35 USC 112, second paragraph as well.

***Claim Rejections - 35 USC § 102***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Bol et al. (US 4,716,965).

With respect to independent claim 1, Bol et al. discloses a well system, comprising: a device which expands into a space in a borehole (2), the space being at least partly defined by a castable material (3) disposed radially between and in contact with the borehole and the device, wherein the device comprises an annular element (5) disposed on a tubular structure (1) in the borehole and including an expandable material (5A, 5B) which extends from a retracted state to an expanded state independent of the tubular structure (col. 3, l. 3-14; col. 1, l. 55-68).

With respect to depending claims 2-5 and 7, the reference discloses the system wherein the space is at least partly defined by a wall of the bore hole (2); wherein the space is at least partly defined by the tubular structure (1) wherein the space at least partly holds a fluid (col. 2, l. 41-col. 3, l. 25); wherein the annular element (5) is adapted to extend from the retracted state to the expanded state as a reaction to exposure to a fluid in the space (col. 3, l. 3-14); and wherein the space comprises an elongated channel (6) substantially defined by the castable material (3), the tubular structure (1) and the borehole wall (2).

With respect to independent claim 8, Bol et al. discloses a method of sealing a space in a borehole (2), the space being at least partly defined by a castable material (3) disposed in the borehole (2), the method comprising the steps of: disposing on a tubular structure (1) at least one annular element (5) comprising an expandable material (5A, 5B) capable of extending from a retracted state to an expanded state (col. 3, l. 3-

14); extending the tubular structure (1) into the borehole (2); then providing the castable material (3) into a volume defined by a wall of the borehole (2) and an outer surface of the tubular structure (1), the castable material (3) extending at least partially circumferentially about the annular element (5); and extending the expandable material (5A, 5B) into contact with the wall of the borehole (col. 3, l. 3-14).

With respect to depending claims 9-12, the reference discloses wherein the disposing step further comprises disposing a plurality of annular elements at spaced intervals along a length of the tubular (col. 3, l. 3-25; Figure 1); wherein the expandable material (5A, 5B) is adapted to extend from the retracted state to the expanded state as a reaction to exposure to a fluid in the space (col. 3, l. 3-14); wherein the expandable material (5A, 5B) extends into the space after the castable material has hardened (col. 2, l. 50 – col. 3, l. 14); and wherein the space comprises an elongated channel (6) substantially defined by the castable material (3), the tubular structure (1) and the borehole wall (2).

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bol et al. as applied to claim 1 above, and further in view of Miller (US 2,230,626).

Bol et al. discloses the method as stated above with respect to independent claim 1. Therein the reference provides for the use of cement as the castable material that hardens and supports the casing by filling the annulus between the casing and the

borehole wall. The reference, however, fails to teach wherein the castable material is concrete as presently claimed. Miller teaches that it is known within a method for cementing an oil well to surround the oil well with cement or concrete for the purpose of sealing off a portion of the well from another (col. 1, l. 1-14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute concrete as a castable material for the cement within the method of Bol et al. in order to fill the space between the casing and the borehole wall and thereby support the casing therein since cement and concrete are known alternatives within the well bore art for sealing a portion of a well.

11. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bol et al.

With respect to independent claim 8, Bol et al. discloses a method of sealing a space in a borehole (2), the space being at least partly defined by a castable material (3) disposed in the borehole (2), the method comprising the steps of: disposing on a tubular structure (1) at least one annular element (5) comprising an expandable material (5A, 5B) capable of extending from a retracted state to an expanded state (col. 3, l. 3-14); extending the tubular structure (1) into the borehole (2); then providing the castable material (3) into a volume defined by a wall of the borehole (2) and an outer surface of the tubular structure (1), the castable material (3) extending at least partially circumferentially about the annular element (5); and extending the expandable material (5A, 5B) into contact with the wall of the borehole (col. 3, l. 3-14).

Although within the portion cited above, the contact with the wall of the borehole is not explicitly disclosed by Bol et al., the reference teaches wherein the annular elements are employed for the purpose of interrupting propagation of a micro-annulus in an axial direction along the casing, and, further, wherein if at a location of an annular element, a relative displacement between the casing and cement body occurs, either in an axial, radial, or tangential direction, the resilient tendency toward expansion of the elastomeric foam layers of the annular element will ensure good adhesion of the annular element to both the casing and the surrounding cement body, thereby sealing off the micro-annulus formed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to extend the expandable material of Bol et al. into contact with the wall of the borehole in order to seal off any micro-annuli formed that extend to the wall of the borehole in a radial or tangential direction.

With respect to depending claims 9-12, the reference discloses wherein the disposing step further comprises disposing a plurality of annular elements at spaced intervals along a length of the tubular (col. 3, l. 3-25; Figure 1); wherein the expandable material (**5A, 5B**) is adapted to extend from the retracted state to the expanded state as a reaction to exposure to a fluid in the space (col. 3, l. 3-14); wherein the expandable material (**5A, 5B**) extends into the space after the castable material has hardened (col. 2, l. 50 – col. 3, l. 14); and wherein the space comprises an elongated channel (**6**) substantially defined by the castable material (**3**), the tubular structure (**1**) and the borehole wall (**2**).



12. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bol et al. in view of Heathman et al. (US H1932 H).

With respect to independent claim 13, Bol et al. discloses a method of sealing an annulus in a borehole, the method comprising the steps of: positioning an expandable material (5A, 5B) on a tubular structure (1); installing the tubular structure (1) in the borehole (2), the annulus being formed between the tubular structure (1) and the borehole (2); then flowing a castable material (3) into the annulus, the castable material (3) partially displacing a fluid in the annulus (col. 2, l. 40-49), and the castable material being disposed radially between the expandable material (5A, 5B) and the borehole (2), and expanding the expandable material (col. 2, l. 50 – col. 3, l. 14).

Bol et al. further discloses wherein when the casing is located in its desired position in the well a cement slurry is pumped via the interior of the casing and the lower casing end upwards into the annulus, thereby causing the cement slurry to drive the drilling fluid out of the annulus, and, further, wherein, as soon as the annulus around the casing is sufficiently filled with the cement slurry, injection of the cement into the well is stopped and the cement slurry is allowed to harden (col. 2, l. 41-53). The reference, however, fails to explicitly disclose wherein the castable material leaves at least one space containing the fluid in the annulus, and, further, wherein the expansion of the expandable material into the space is in response to contact between the expandable material and the fluid that remains in the space as claimed.

Heathman et al. discloses a method of cementing an oil or gas well wherein, as described in reference to Figure 1, a thin layer 8 is created between a tubular string in

the well bore and the inner surface of the column of cement **6**; the thin layer does not extend along the length of the tubular string or column of cement, but, is shown to illustrate a micro-annulus made of, typically, a coating of drilling mud or other fluid previously in the well prior to displacement by the cement (col. 4, l. 55-63). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made that in displacing the cement slurry of Bol et al. from the well, a portion of the drilling fluid may remain in contact with the casing and the inner surface of the column of cement, thereby leaving at least one space containing the fluid in the annulus, and, further, that such space would create a micro-annulus, wherein, as disclosed by Bol et al., the expandable material will expand in order to seal off the fluid passageway formed (Bol. et al., col. 3, l. 3-14).

With respect to depending claims 14-16 and 19, Bol et al. discloses wherein the positioning step further comprises positioning a plurality of sleeves (**5**) on the tubular structure (**1**), each of the sleeves (**5**) including the expandable material (**5A**, **5B**); wherein the expanding step is performed in response to contact between the expandable material and the fluid (col. 3, l. 3-14); wherein the expanding step is performed at least partially after the castable material (**3**) has hardened in the annulus (col. 2, l. 40 – col. 3, l. 14); and wherein in the positioning step the expandable material comprises a swellable material (col. 2, l. 26-33).

With respect to depending claims 17, 18, and 20, as provided above within the rejection of independent claim 13, Bol et al. teaches wherein the flowing step further comprises leaving the space so that the space is bounded at least partially by the

castable material; wherein the flowing step further comprises leaving the space so that the space is bounded at least partially by the borehole; and wherein the flowing step further comprises contacting a portion of the expandable material with the castable material, and contacting another portion of the expandable material with the fluid in the space, insofar as because as taught by Heathman et al. in reference to Figure 1, a thin layer 8 is created between a tubular string in the well bore and the inner surface of the column of cement 6; the thin layer does not extend along the length of the tubular string or column of cement, but, is shown to illustrate a micro-annulus made of, typically, a coating of drilling mud or other fluid previously in the well prior to displacement by the cement (col. 4, l. 55-63), and, therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made that in displacing the cement slurry of Bol et al. from the well, a portion of the drilling fluid may remain in contact with the casing and the inner surface of the column of cement, thereby leaving at least one space containing the fluid in the annulus. In doing so, a micro-annulus is created, into which, as disclosed by Bol et al., the expandable material will expand in order to seal off the fluid passageway formed, thereby contacting the castable material and the fluid in the space (Bol. et al., col. 3, l. 3-14).

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4,936,386: Colangelo discloses a method for sealing boreholes around well casings by placing a plurality of liquid-absorbing annular sealing elements which swell upon contact with liquid in the borehole around the casing; US 3,387,656: Guest et al. discloses the placement of an elastomeric ring on the outside of a well bore tubular subsequent to which conventional well bore cementing takes place; US 2004/0055760: Nguyen discloses a method and apparatus for forming an annular barrier in a well bore wherein an expandable media assembly creates an annular barrier in a subterranean formation; US 3,918,523: Stuber discloses a method and means for implanting casing wherein a plurality of bracelet members comprising an expandable material are attached to the casing; us 7,422,071: Wilkie et al. discloses a packer for downhole use that comprises swelling material wherein, in one embodiment, the packer may contact the borehole wall.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. DiTrani whose telephone number is (571)272-2182. The examiner can normally be reached on M-F, 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on (571)272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Zakiya W. Bates/

Primary Examiner, Art Unit 3676